

IN THE CLAIMS

This set of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A pharmaceutical composition for intranasal administration to a mammal[[;]] comprising: an effective amount of an opioid, a liquid nasal carrier for the opioid; and one or more sweeteners, flavoring agents, or taste masking agents or combinations thereof, wherein the composition is preservative free and has a pH of about 3 to about 6.
2. (Original) A pharmaceutical composition according to claim 1, wherein the opioid is morphine, apomorphine, hydromorphone, oxymorphone, dihydromorphine, levorphanol, levallorphan, levophenacymorphan, norlevorphanol, nalorphine, nalbuphine, buprenorphine, butorphanol, naloxone, naltrexone, nalmexone, oxilorphan, cyclorphan, ketobemidone, fentanyl, sufentanil, alfentanil, or combinations thereof.
3. (Currently Amended) The A pharmaceutical composition ~~according to~~ of claim 2, wherein the opioid is hydromorphone or a pharmaceutically acceptable salt thereof.
4. (Currently Amended) The A pharmaceutical composition ~~according to~~ of claim 2, wherein the opioid is butorphanol or a pharmaceutically acceptable salt thereof.
5. (Cancelled).
6. (Cancelled).
7. (Currently Amended) The A pharmaceutical composition of ~~according to~~ claim 1, wherein the composition contains a buffering agent.
8. (Original) A pharmaceutical composition according to claim 1, wherein the composition is a sterile solution or suspension.
9. (Cancelled).
10. (Original) A pharmaceutical composition according to claim 1, wherein the composition has a pH of about 5.0.

11. (Currently Amended) A method for providing analgesia to a subject in need thereof, the method comprising intranasally administering to the subject, using an intranasal unit-dose delivery device, a pharmaceutical composition having improved bioavailability for intranasal administration to a mammal; comprising: an effective amount of butorphanol[{};] or a pharmaceutically acceptable salt thereof, and a preservative-free liquid nasal carrier, wherein upon intranasal administration of the composition to a subject in an amount containing about 1.4 mg of butorphanol moiety, the subject exhibits a C_{max} butorphanol plasma concentration of at least about 4000 pg/ml.
12. (Currently Amended) ~~A pharmaceutical composition according to~~ The method of claim 11, wherein the preservative-free liquid nasal carrier comprises anhydrous citric acid, purified water and the composition has a pH of about 3 to about 6 5.0, wherein the pharmaceutical composition is free from the preservative benzethonium.
13. (Currently Amended) ~~A pharmaceutical composition according to~~ The method of claim 11 12, wherein the composition is a sterile solution or suspension.
14. (Cancelled).
15. (Cancelled).
16. (Currently Amended) ~~The A pharmaceutical composition method of according to claim 11 12,~~ wherein the composition has a pH of about 5.0.
17. (Currently Amended) An intranasally deliverable pharmaceutical composition having improved bioavailability for intranasal administration to a mammal; comprising: an effective amount of hydromorphone[{};] or a pharmaceutically acceptable salt thereof and a liquid nasal carrier having the essential absence of a preservative and the composition containing at least one sweetener, flavoring agent or masking agent, wherein upon intranasal administration of the composition to a subject in an amount containing about 1.8 mg of hydromorphone moiety, the subject exhibits a C_{max} hydromorphone plasma concentration of at least about 4000 pg/ml.
18. (Currently Amended) An intranasally deliverable pharmaceutical composition for intranasal administration to a mammal; comprising[{}:] an effective amount of

hydromorphone or a pharmaceutically acceptable salt thereof, and a preservative-free liquid nasal carrier comprising sodium chloride, citric acid, and water ~~and at least one sweetener, flavoring agent or masking agent.~~

19. (Currently Amended) A The pharmaceutical composition ~~according to~~ of claim 18, wherein the composition is a sterile solution or suspension.
20. (Currently Amended) A The pharmaceutical composition ~~according to~~ of claim 178, wherein the ~~at least one sweetener, flavoring agent or masking agent is saccharin, sodium saccharin, xylitol, mannitol, sorbitol, sucrose, sucralose, maltodextrin, aspartame, acesulfame potassium, dextrose, glycosides, maltose, sweet orange oil, glycerin, wintergreen oil, peppermint oil, peppermint water, peppermint spirit, menthol, or combinations thereof~~ composition has a pH of about 3 to about 6.
21. (New) The pharmaceutical composition of claim 18 wherein the liquid nasal carrier comprises a buffering agent.
22. (New) The pharmaceutical composition of claim 18 wherein the buffering agent is selected from sodium citrate, sodium acetate, sodium phosphate and mixtures thereof.
23. (New) The pharmaceutical composition of claim 22 wherein the composition has a pH of about 3 to about 6.
24. (New) The method of claim 11, wherein upon intranasal administration of the composition from a unit dose delivery device to a subject in an amount of the composition containing about 1.4 mg of butorphanol moiety, the subject exhibits a C_{\max} butorphanol plasma concentration of at least about 5000 pg/ml.
25. (New) The method of claim 11, wherein upon intranasal administration of the composition from a unit dose delivery device to a subject in an amount of the composition containing about 1.4 mg of butorphanol moiety, the subject exhibits a T_{\max} butorphanol plasma concentration of about 0.083 to about 0.333 hours.
26. (New) The method of claim 11, wherein upon intranasal administration of the composition from a unit dose delivery device to a subject in an amount of the composition containing about 1.4 mg of butorphanol moiety, the subject exhibits an AUC(0-t) butorphanol plasma concentration of about 5351 to about 17722 pg*hr/ml.

27. (New) The method of claim 11, wherein upon intranasal administration of the composition from a unit dose delivery device to a subject in an amount of the composition containing about 1.4 mg of butorphanol moiety, the subject exhibits: a C_{\max} butorphanol plasma concentration of at least about 4000 pg/ml; a T_{\max} butorphanol plasma concentration of about 0.083 to about 0.333 hours; and an AUC(0-t) butorphanol plasma concentration of about 5351 to about 17722 pg*hr/ml.
28. (New) An intranasal unit-dose delivery device comprising one or more sealed vessels containing a sterilized, preservative-free pharmaceutical composition, said composition comprising an effective amount of butorphanol tartrate and a liquid nasal carrier, wherein upon positioning the device 1 cm away from a laser beam detection pathway, actuating the device to produce a spray plume perpendicular to said pathway, and detecting droplet size distribution of the spray plume with said laser beam detection pathway, the spray plume has a maximum droplet size of about 2.2 to about 2.4 μm .
29. (New) The intranasal unit-dose delivery device of claim 28 wherein the butorphanol tartrate is present in a total amount about 0.1 to about 10 mg.
30. (New) The intranasal unit-dose delivery device of claim 29 wherein the composition comprises a buffering agent.
31. (New) The intranasal unit-dose delivery device of claim 30 wherein the buffering agent is a salt of citrate, acetate or phosphate or combination thereof.
32. (New) The intranasal unit-dose delivery device of claim 31 wherein the buffering agent is present in the composition in a total amount of about 0.01% to about 3%, by weight.
33. (New) The intranasal unit-dose delivery device of claim 28 wherein the liquid nasal carrier comprises an aqueous diluent.
34. (New) The intranasal unit-dose delivery device of claim 33 wherein the aqueous diluent is selected from the group consisting of saline, water, dextrose or combinations thereof
35. (New) The intranasal unit-dose delivery device of claim 34 wherein the composition further comprises a sweetening agent.

36. (New) The intranasal unit-dose delivery device of claim 35 wherein the sweetening agent is selected from the group consisting of acacia syrup, anethole, anise oil, aromatic elixir, benzaldehyde, benzaldehyde elixir, caraway, caraway oil, cardamom oil, cardamom seed, cardamom spirit, cardamom tincture, cherry juice, cherry syrup, cinnamon, cinnamon oil, cinnamon water, citric acid, citric acid syrup, clove oil, cocoa, cocoa syrup, coriander oil, dextrose, eriodictyon, eriodictyon fluidextract, eriodictyon syrup, aromatic, ethylacetate, ethyl vanillin, fennel oil, ginger, ginger fluidextract, ginger oleoresin, dextrose, glucose, sugar, maltodextrin, glycerin, glycyrrhiza, glycyrrhiza elixir, glycyrrhiza extract, glycyrrhiza extract pure, glycyrrhiza fluidextract, glycyrrhiza syrup, honey, iso-alcoholic elixir, lavender oil, lemon oil, lemon tincture, mannitol, methyl salicylate, nutmeg oil, orange bitter, elixir, orange bitter, oil, orange flower oil, orange flower water, orange oil, orange peel, bitter, orange peel sweet, tincture, orange spirit, compound, orange syrup, peppermint, peppermint oil, peppermint spirit, peppermint water, phenylethyl alcohol, raspberry juice, raspberry syrup, rosemary oil, rose oil, rose water, stronger, saccharin, saccharin calcium, saccharin sodium, sarsaparilla syrup, sarsaparilla compound, sorbitol solution, spearmint, spearmint oil, sucrose, sucralose, syrup, thyme oil, tolu balsam, tolu balsam syrup, vanilla, vanilla tincture, vanillin, wild cherry syrup, or combinations thereof.
37. (New) The intranasal unit-dose delivery device of claim 28 wherein upon positioning the device 1 cm away from an impaction plate, actuating the device to produce a spray plume onto said impaction plate, and measuring minimum diameter of the spray pattern, the spray pattern has a minimum diameter of about 2.0 to about 2.2 cm.
38. (New) The intranasal unit-dose delivery device of claim 28 wherein upon positioning the device 1 cm away from a detection laser beam, actuating the device to produce a spray plume perpendicular to said laser beam, and detecting droplet size distribution of the spray plume, the spray plume has a Dv10 of about 13.7 to about 19.8 μm .
39. (New) The intranasal unit-dose delivery device of claim 28 wherein upon positioning the device 1 cm away from a detection laser beam, actuating the device to produce a spray plume perpendicular to said laser beam, and detecting droplet size distribution of the spray plume, the spray plume has a Dv50 of about 20.31 to about 55.67 μm .

40. (New) The intranasal unit-dose delivery device of claim 28 wherein upon positioning the device 1 cm away from a detection laser beam detection, actuating the device to produce a spray plume perpendicular to said laser beam, and detecting droplet size distribution of the spray plume, the spray plume has a span of about 1.55 to about 1.91.
41. The intranasal unit-dose delivery device of claim 28 wherein upon positioning the device 5 cm away from an impaction plate, actuating the device to produce a spray pattern onto said impaction plate, and measuring maximum diameter of the spray pattern, the spray pattern has a maximum diameter of about 7.0 to about 8.4 cm.
42. (New) The intranasal unit-dose delivery device of claim 28 wherein upon positioning the device 5 cm away from an impaction plate, actuating the device to produce a spray pattern onto said impaction plate, and measuring maximum diameter of the spray pattern, the spray pattern has a minimum droplet size of about 5.8 to about 8.0 μm .
43. (New) The intranasal unit-dose delivery device of claim 28 wherein upon positioning the device 5 cm away from a detection laser beam, actuating the device to produce a spray plume perpendicular to said laser beam, and detecting droplet size distribution of the spray plume, the spray plume has a Dv10 of about 14.38 to about 17.17 μm .
44. (New) The intranasal unit-dose delivery device of claim 28 wherein upon positioning the device 5 cm away from a detection laser beam, actuating the device to produce a spray plume perpendicular to said laser beam, and detecting droplet size distribution of the spray plume, the spray plume has a Dv50 of about 31.03 to about 35.32 μm .
45. (New) The intranasal unit-dose delivery device of claim 28 wherein upon positioning the device 5 cm away from a detection laser beam, actuating the device to produce a spray plume perpendicular to said laser beam, and detecting droplet size distribution of the spray plume, the spray plume has a span of about 1.5 to about 1.9.